directors. Questions relating to commercial, technical, artistic, and agricultural training are fully discussed in the resolution.

A NEW building, called Palmer Hall, which has been opened at Colorado College, Colorado, has cost more than 50,000*l.*, and is to be devoted chiefly to the scientific departments. The dedicatory address was delivered by the president of Stanford University, Dr. D. S. Jordan, who in the course of his remarks said:—" As the university ideal of England is one of personal culture, that of Germany is one of personal knowledge. An educated German may lack culture—of this there are many conspicuous examples, just as in England a cultured gentleman may lack exactness of knowledge on all points. In America, a new ideal is arising as a result of the creative needs of our strenuous and complex times. We value education for what can be made of it. Our idea is personal effectiveness. We care less and less for surface culture, less and less for mere erudition. We ask of each man not what he knows, but what he can do with his knowledge. This ideal of education has its dangers. It may lead us to sacrifice permanent values for temporary success. It may tend to tolerate boorishness and shallowness, if they present the appearance of temporary achievement. But the fact remains, the value of science lies in its relation to human conduct. The value of knowledge lies in the use we can make of it. As each thought of the mind tends to work itself out in action, so does each accession of human knowledge find its end in fitting men to live saner and stronger lives. We may, therefore, rest content with the ideal of effectiveness."

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, February 18.—"Note on the Formation of Solids at Low Temperatures, particularly with regard to Solid Hydrogen." By Morris W. **Travers,** D.Sc., Professor of Chemistry at University College, Bristol. Communicated by Sir W. Ramsay, K.C.B., F.R.S.

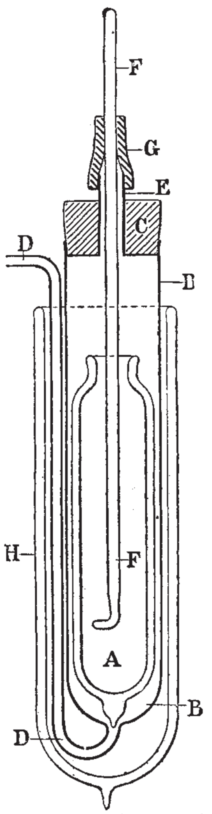
In the year 1902 Dr. Jaquerod and the author carried out some experiments on liquid and solid hydrogen with the view of determining its vapour pressure on the scales of the constant-volume helium and hydrogen thermometers. They found that hydrogen remained liquid down to 14°·2 (He scale), the lowest temperature to which they could reduce a large mass of the liquid by means of the pump at their disposal. When, however, a small quantity of liquid hydrogen, cooled to 14°·2 in a glass tube immersed in the liquid contained in the large vacuum vessel, was allowed to evaporate under reduced pressure, it solidified when the pressure fell to 49 or 50 mm. of mercury. This pressure corresponds to a temperature of 14°·1 on the helium scale. The presence of the solid was determined by mechanical means, and it was not possible to observe its appearance.[1]

Dewar gives the melting point of hydrogen at about 15° absolute, and the melting pressure at 55 mm. of mercury. He describes its appearance as that of "frozen foam," or as "clear transparent ice."[2]

It appeared to the author worth while to carry out a few experiments to try to determine whether solid hydrogen formed definite crystal, or, indeed, whether the glassy substance was a true solid or merely a highly viscous fluid. The following is an instance in which both such changes occur.

If an organic liquid, such as ethyl acetoacetate, is cooled slowly to the temperature of liquid air it is converted into crystalline solid, the formation of the crystals commencing when the liquid is cooled to about −150° C., usually at several points on the side of the vessel, and spreading rapidly throughout the mass. If, on the other hand, the liquid is cooled very rapidly, a hard glassy substance is formed, and though crystals may begin to appear, they will only do so locally, as the velocity of crystallisation decreases rapidly as the viscosity of the liquid increases. The glassy substance is really a liquid of high viscosity; it is formed with perfect continuity from the normal liquid state, and should differ from the solid (crystalline) form in its physical properties. Such a substance might, for convenience, be called a pseudo-solid.

In the investigation of solid hydrogen the apparatus shown in the accompanying figure was employed. The liquid hydrogen was introduced into a small clear-glass vacuum-vessel 15 cm. long and 4 cm. in internal diameter. This vessel was placed inside a glass tube BB, which communicated with an exhaust pump through a tube DD sealed to it, and was closed by a rubber stopper C. A short glass tube E, 6 mm. in diameter, passed through the stopper, and through it passed the stirring rod FF. To allow of free rotating motion to the stirrer, and to make the apparatus gas-tight, a short piece of rubber tube G was passed over the end of the tube E and was wired to F. The lower part of the apparatus was contained within the vacuum vessel H, which contained a small quantity of liquid air.



When the liquid hydrogen was made to boil *in vacuo*, its temperature fell, but the liquid did not appear to become more viscous. At length films of a colourless glassy substance formed at the surface, and broke away as the bubbles rose. After a short time the vessel became filled with these flakes, and while in this condition stirring, by giving the top of the rod F a rotatory motion, did not appear to indicate that the portion which remained liquid had undergone any considerable increase in viscosity. After a time the mass contained so much solid that it became pasty, and finally the whole of it appeared fairly homogeneous.

The solid evaporated fairly rapidly, so that after about ten minutes only a hollow cylinder of it, about 3 cm. long and 2·5 cm. in diameter, remained. This had the appearance of a film of ice which had partly thawed, consisting of clear granules connected by thinner and less transparent portions of solid. No crystals were observed on either of the three occasions on which the experiments were carried out. An attempt was made to examine the solid in the field of a polariscope, but it was unsuccessful.

Though there is no direct evidence of the formation of crystalline hydrogen, the author's experiments lead to the belief that solid hydrogen is a crystalline substance and not a pseudo-solid. The sharpness with which the solid hydrogen is formed, and the constancy of the apparent melting pressure, are distinct evidence in favour of this conclusion, though it must be allowed that the rate of change in viscosity, when the temperatures are measured on the Centigrade scale, will probably appear to be more rapid at low temperatures than at high temperatures.

The whole question of the formation of solids at very low temperatures is of great interest both from a physical and from a biological standpoint. It is quite possible that if living organisms were cooled only to temperatures at which physical changes, such as crystallisation, take place with measurable velocity, the process would be fatal, whereas if they once were cooled to the temperature of liquid air, no such change could take place within finite time, and the organism would survive.[1]

These experiments were made in connection with some investigations which were being carried out at University College, London, with the assistance of a grant from the Royal Society. As the author is at present unable to continue the work, he has decided to publish this note.

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[1] *Phil. Trans.*, A, vol. cc., p. 170.

[2] British Association, Presidential Address, 1902. See also paper on "Solid Hydrogen," Brit. Assoc. Report, 1899, reprinted in NATURE; also Roy. Inst. *Proc.*, 1900.

[1] Experimental results are given by Macfadyen, Roy. Soc. *Proc.*, vol. lxvi., 1900, pp. 180, 339, 488; Swithinbank, Roy. Soc. *Proc.*, vol. lxviii., 1901, p. 502.

Geological Society, February 19.—Annual general meeting.—Sir Archibald Geikie, F.R.S., vice-president, in the chair.—After the presentation of the annual awards, the chairman proceeded to read the anniversary address that he had prepared, giving first of all obituary notices of several fellows deceased since the last annual meeting. He then dealt with the bearing of the evidence furnished by the British Isles as to the problem whether in the so-called secular elevation and subsidence of land it is the land or the sea which moves. The conclusion thus reached was in favour of the generally accepted view that changes of level, such as those of Pleistocene and post-Pleistocene time, in the British area, have been primarily due, not to any oscillation of the surface of the ocean, but directly to movements of the terrestrial crust.

February 24.—Dr. J. E. Marr, F.R.S., president, in the chair.—Eocene and later formations surrounding the Dardanelles: Lieut.-Colonel T. **English**, late R.E. Our present knowledge of the older rocks, upon which the Tertiary beds surrounding the Dardanelles rest, only suffices to indicate the positions of the outcrops of a succession of schists, crystalline limestones, granites, and serpentines, which can be traced from the Ægean district into the Marmora, where they formed an archipelago in the Eocene Sea. The Eocene deposits surrounding these old rocks commence with sandstones, conglomerates, and clays, which become calcareous and nummulitic upward, and are about 2000 feet thick in the aggregate. They are succeeded by 3000 feet of lacustrine sandstones, clays, and schists, interstratified with volcanic rocks, and containing coal-seams. These beds have yielded Anthracotherium, plant remains, and *Corbicula semistriata* at the coal-horizon, which is near the middle of the series. They are widely spread in southern Thrace, and are cut off to the eastward by the falling-in of the Marmora sea-bed. The author has traced them along the Gallipoli Peninsula to Imbros Island; Lemnos and Samothrake are partly composed of similar beds, and he considers that all these deposits represent the uppermost Eocene and the Oligocene, and that the coal-seams belong to the latter. The paper is accompanied by three appendices, one on the rock-specimens, by Dr. J. S. Flett; one on the collection of Tertiary and post-Tertiary fossils, by Mr. R. Bullen Newton; and a third, by Mr. R. Holland, on species of Nummulites.—The Derby earthquakes of March 24 and May 3, 1903: Dr. Charles **Davison**. The undoubted earthquakes of this series were four in number. The first and strongest occurred on March 24, 1903, at 1.30 p.m., and was felt over an area of about 12,000 square miles, its centre coinciding with the village of Kniveton, near Ashbourne. The shock consisted of two distinct parts, separated by an interval of about three seconds, which coalesced, however, within a narrow rectilinear band running centrally across the disturbed area at right angles to the longer axes of the isoseismal lines. The isacoustic lines (or lines of equal sound-audibility) are very elongated curves, distorted along the rectilinear band. The earthquake, it is concluded, was caused by simultaneous slips within two detached foci situated along a fault-surface running from north 33° east to south 33° west, hading to the north-west, and passing close to the village of Hognaston. The strongest after-shock occurred on May 3, its focus lying along the same fault, for the most part between the two foci of the principal earthquake, but much nearer the surface. The principal earthquake was registered by an Omori horizontal pendulum at Birmingham, by a Milne seismograph at Bidston (near Birkenhead), and by a Wiechert pendulum at Göttingen (502 miles from the epicentre). The larger waves travelled with a velocity of 2·9 kilometres per second.

Chemical Society, March 3.—Dr. W. A. Tilden, F.R.S., president, in the chair.—The following papers were read:—Chemical dynamics of the alkyl iodides: Miss K. A. **Burke** and F. G. **Donnan**. The authors have determined the velocity of the reaction between silver nitrate and various alkyl iodides in alcoholic solution, and have compared the results so obtained with those observed by previous workers using other reactions of the alkyl haloids.—Separation of β-crotonic acid from α-crotonic acid: R. S. **Morrell** and A. E. **Bellars**. This separation was effected by recrystallisation of the quinine salts of the mixed acids.—Contribution to the knowledge of the β-diketones: S. **Ruhemann** and E. R. **Watson**.—Purification of water by continuous fractional distillation: W. R. **Bousfield**. The apparatus consists of a copper boiler provided with a series of "baffle plates" to prevent "spraying," leading to a condenser consisting of a series of test-tubes cooled by adjustable streams of water at different temperatures. The distilled water which drips from the coldest portions of the condenser is sufficiently pure to be used in electrical conductivity experiments.—Freezing point curves of dynamic isomerides. Ammonium thiocyanate and thiocarbamide: A. **Findlay**. The freezing point curve consists of two branches meeting at the eutectic point 104·3.—Constitution of phenolphthalein: A. G. **Green** and A. G. **Perkin**.—δ-Ketohexahydrobenzoic acid: W. H. **Perkin**, jun.—Photochemically active chlorine: C. H. **Burgess** and D. L. **Chapman**.—The union of hydrogen and chlorine, part viii., the action of temperature on the period of induction: J. W. **Mellor**. It is shown that the period of induction shortens with increase of temperature up to 38°; above this point the temperature effect is obscured, probably by the influence of the water vapour present.—The union of hydrogen and chlorine, part ix., further experiments on the action of light on chlorine: J. W. **Mellor**. It is shown that the greater chemical activity of "insolated" chlorine is closely related with the presence of water vapour.—Additive compounds of unsaturated cyclic ketones with hydrogen cyanide: A. C. O. **Hann** and A. **Lapworth**. A description of the additive compounds obtained from carvone and pulegone.—Formation of periodides in organic solvents: H. M. **Dawson**. A study of the potassium periodides formed by the solution of potassium iodide and iodine in organic aromatic and aliphatic solvents.—The action of sodium hypochlorite on the aromatic sulphonamides: H. S. **Raper**, J. T. **Thompson** and J. B. **Cohen**. A description of the compounds obtained.

Linnean Society, March 3.—Prof. S. H. Vines, F.R.S., president, in the chair.—Mr. L. A. **Boodle** exhibited photographic lantern-slides demonstrating the formation of secondary wood in certain regions of the stem of *Psilotum triquetrum*.—List of the Carices of Malaya: C. B. **Clarke**, F.R.S. After defining his meaning of the term Malaya, the author explained that he had been obliged to confine his remarks to the material existing at Kew, with certain additional specimens lent by Dr. Zahlbruckner, of Vienna, who had sent over some of the types of Zollinger's collections. The British Museum herbarium could not be utilised, owing to the impracticability of comparing the specimens belonging to the two institutions. In all, fifty-four species are here enumerated, of which thirty-six, including the eleven here characterised as new, belong to the subgenus Caricandra, a natural group essentially tropical and difficult to diagnose as to species, all possessing a trifid style, with a terminal spike male in the upper portion and female at the base.—On some species of the genus Palæmon, Fabr., from Tahiti, Shanghai, New Guinea, and West Africa: Dr. J. G. **de Man**.—The species discussed are distributed by the author over three subgenera. Relative measurements and minute details of various specimens are explained and illustrated by drawings, to show the amount of variation possible among examples undoubtedly belonging to a single species, and on the other hand to offer materials for deciding whether forms from two or more widely separated localities should be accepted as specifically identical.

Mathematical Society, March 10.—Dr. E. W. Hobson, vice-president, and temporarily Prof. Elliott, vice-president, in the chair.—The following papers were communicated:—On inner limiting sets of points in a linear interval: Dr. E. W. **Hobson**. Every point of an inner limiting set may be enclosed in a sequence of intervals of breadths tending to zero in such a way that those limiting points of the set which do not belong to the set are not, in the limit, interior points of any of the intervals. The cardinal number of the points of an inner limiting set is known to be either that of the natural numbers or that of the continuum. It is shown in the paper that the necessary and sufficient condition that an enumerable set may be an inner limiting set is that it contains no component which is dense in itself. The most general character of an inner limiting set which is unenumerable is also determined. The importance of the theory in connection with functions of real variables is explained.—On the unique expression of a quantic of any order in any number of variables with an application to binary perpetuants: P. W. **Wood.** The paper contains a new proof that the minimum weight of an irreducible perpetuant of degree δ is $2^{\delta-1}-1$.—(1) The derivation of generalised Bessel coefficients from a function analogous to the exponential; (2) transformation of generalised Legendre functions: Rev. F. H. **Jackson.** In a series of papers the author has shown how functions defined by known power series may be generalised by replacing the numbers $1, 2, \ldots n$ in the coefficients by the numbers $p_1, p_2, \ldots p_n$ of a chosen sequence. The two papers now communicated trace various analogies between Bessel functions and Legendre functions and the functions that are derived from them by this process.—The singularities of functions defined by power series: H. M. **Macdonald.**—Illustrations of modes of decay of vibratory motions: Prof. A. E. H. **Love.** The ordinary processes for determining the rate of decay of vibratory motion by transmission of waves through the surrounding medium afford a good approximation when the rate in question is slow, but they are inadequate for determining the motion of the medium. It is shown that when a sphere vibrates in air the slightly damped harmonic wave, with nearly the period of the vibrator, must be accompanied in its passage through the air by one or more subsidiary waves, of exponential or rapidly damped harmonic type, which serve to establish the front of the advancing wave. When electrical oscillations are set up on a spherical conductor, the waves that travel through the æther are analogous to the subsidiary waves in the sound problem. Corresponding with any surface harmonic distribution of the initial charge a system of such waves advances into the initial electrostatic field of the distribution, and all the waves of the system must coexist in order that the wave-front may advance. The wave-motions cannot be propagated independently. As the front of the composite system of waves advances the electrostatic energy of the initial field is converted into electromagnetic energy, which is accumulated in a narrow region at the front of the advancing wave.

EDINBURGH.

Royal Society, February 1.—Lord Kelvin, president, in the chair.—The **President** read a paper on deep-water two-dimensional waves produced by any given initiating disturbance, which was in continuation of a paper on the front and rear of a free procession of waves in deep water, read seventeen years ago. In that paper a question had been raised and a solution given in symbols which still, however, awaited tabulation or graphical calculation. The problem of the surface motion of waves in very deep water had long been solved, but the problem of waves circling out in all directions from the surface disturbance produced by the falling of a stone into the water was a far more difficult problem, which nothing known in mathematics enabled the mathematician to calculate. In the present paper Lord Kelvin gave the solution of an analogous though simpler problem. Given a certain definitely specified initial disturbance fitted to generate two-dimensional wave motion, the results showed the genesis of waves from a condition in which there was nothing undulating whatever.—Dr. G. A. **Berry** read a paper on the relation of visual efficiency to visual acuity, being a consideration of the data for determining in general the relative loss of efficiency caused by accidents which lead to different degrees of interference with sight. The object was to get some basis for calculating the amount of compensation which should be allowed by the Workman's Compensation Act when sight had been damaged to various extent by accident, and thus avoid the frequent litigation to which such accidents now give rise. The data for establishing a visual efficiency scale were somewhat arbitrary, but basing on certain principles, the author deduced the following expression for the efficiency:—

$$E = \frac{m+1-\dfrac{V+V'}{2}-\dfrac{V-V'}{V+V'}\left(1-\dfrac{V+V'}{2}\right)}{m-1+2/(V+V')}$$

where V, V′ were the visual acuities of the better and worse eyes respectively, and m a number such that the fraction $m/(m+1)$ represented the reduction in sight due to complete loss in one eye with retention of full sight in the other. Tables of efficiency were given for different values of m, also maximum and minimum curves for $m=3$.

February 15.—Dr. Horne in the chair.—Dr. T. J. **Jehu** read a paper on the Glacial deposits of northern Pembrokeshire, in which full descriptions were given of (1) the lower Boulder-clay; (2) the sands and gravels; (3) the upper Boulder-clay and rubbly drift. Boulders from the south of Scotland and the north-west of Ireland were found, showing that the northern ice-sheet had covered the whole of north Pembrokeshire. The results led to a clearer view than had been possible hitherto as to limits of the various ice sheets which glaciated that region.—In a communication on sea temperature and solar radiation, Prof. C. G. **Knott** discussed some of the data furnished by the elaborate observations of temperature at various depths in the Mediterranean Sea made by the staff of the Austrian warship *Pola*. It was shown that direct solar radiation was not appreciable to depths greater than 15 metres, and that the vertical distribution of temperature within the upper layers was largely conditioned by convection or diffusion of material. An estimate was made of the amount of solar heat which gets into the water every day and leaves it at night, and it was found that about two-thirds of the available solar energy incident on the surface of the waters was so entrapped and set free. The processes by which this diurnal influx and efflux of heat took place were discussed in some detail.

PARIS.

Academy of Sciences, March 7.—M. Mascart in the chair.—The president announced the death of M. Fouqué, member of the section of mineralogy.—Researches on the gaseous exchanges between the atmosphere and plants deprived of their roots, and kept in the dark: M. **Berthelot.** The gases given off during the maturing of hay were measured, together with the rise of temperature. Neither methane nor ammonia were given off, the gases containing carbon dioxide, oxygen, and nitrogen only.—On the rhizomes and roots of the fossil ferns and of the Cycadofilices: M. **Grand'Eury.**—On the formation of glycuronic acid in the blood: R. **Lepine** and M. **Boulud.** The authors have shown in a previous paper that glycuronic acid is present in the liver, and now give experimental evidence that the lævorotatory power of certain extracts of blood from the hepatic veins is due to derivatives of this acid.—M. Agassiz was elected a foreign associate in the place of the late Sir George Gabriel Stokes, and M. Warming a correspondant in the section of botany in the place of M. Agardh.—The dielectric cohesion of argon and its mixtures: E. **Bouty.** Argon is characterised by the smallness of its dielectric cohesion, which is even less than that of hydrogen. Minute traces of foreign gases produce a remarkable increase in the cohesion, this increase being much greater than would be indicated by the law of mixtures.—The general law of magnetofriction: H. **Pellat.** In an intense magnetic field the particles in motion, the kathode rays, undergo an action analogous to an anisotropic friction, which is large in a direction perpendicular to the lines of force, but almost nothing in the direction of these lines.—Experimental proofs of the laws of anomalous propagation of light along the axis of an optical instrument: G. **Sagnac.**—An elementary demonstration of the phase rule: C. **Raveau.**—The different conditions of a spark fractionated by blowing: J. **Lemoine** and L. **Chapeau.** When a stream of sparks is allowed to pass over a spark gap for some time, there is an abrupt change in the nature of the discharge. This is due to the spontaneous oxidation of the brass, the formation of oxide causing a lower explosive potential than with polished brass balls.—The action of certain chemical and osmotic phenomena on phosphorescence: M. **Lambert.**—On europium: G. **Urbain** and H. **Lacombe.** The authors have applied their method of crystallisation with magnesium and bismuth nitrates to the separation of europium (Demarçay) from monazite sand. The sand contains only about 0·002 per cent. of this oxide, which forms a sulphate $Eu_2(SO_4)_3.8H_2O$. The atomic weight was found to be 151·8.—The action of carbon dioxide upon the metal ammoniums: Étienne **Rengade.** Carbon dioxide reacts with sodium-ammonium and potassium-ammonium. Below −50° C. the alkaline carbamate and hydrogen are the sole products. At a higher temperature some formate is also produced.—A general method for the preparation of anhydrous chlorides: C. **Matignon** and F. **Bourion.** A mixture of chlorine and sulphur chloride reacts with metallic oxides at moderately low temperatures, giving an anhydrous chloride. Details are given of the preparation of the chlorides of silicon, aluminium, thorium, praseodidymium, neodidymium and samarium.—On the phenylurethanes of the sugars: L. **Maquenne** and W. **Goodwin.**—On allyl- and propenyl-alkyl ketones: E. E. **Blaise.** In the allyl-alkyl-ketones, migration of the ethylene linkage occurs with extreme facility, and details are given of the various ways in which this may be effected.—The combination of saccharose with some metallic salts: D. **Gauthier.**—On the development of annual oil-containing plants: G. **André.**—On the development of the perithecium in the Ascomycetes: P. A. **Dangeard.**—On the perpetuation of the mildew of the vine: Gy **de Istvanffi.** The author has been able to prove the presence of the mycelium in a latent state in several organs of the vine during the winter months.—Faults and folds: H. **Douvillé.**—On the chemical composition of the crystalline strata of the Belledonne Chain: Pierre **Termier** and André **Leclère.**—The action of the n-rays upon the sense of hearing: Augustin **Charpentier.** The sensibility of the ear is increased when acted upon by the n-rays.—The physiological action of the n_1-rays of Blondlot: Augustin **Charpentier.** M. Blondlot has recently described a new species of rays possessing physical properties which are the inverse of the n-rays previously studied. These rays also produce the inverse effects on the nervous system; thus they diminish the intensity of the sensation of smell, whereas the n-rays increase it.—On the relations of the colouring matter of subrenal extract with tyrosine: Gab. **Bertrand.**—The oxidation of formic acid by extracts of animal tissues in presence of hydrogen peroxide: F. **Battelli.**—The action of artificial oxydases upon the tetanic toxin: Aug. **Lumière,** L. **Lumière** and J. **Chevrottier.**

DIARY OF SOCIETIES.

THURSDAY, March 17.

Royal Society, at 4.30.—Physical Constants at Low Temperatures. (1) The Densities of Solid Oxygen, Nitrogen, Hydrogen, &c: Prof. J. Dewar, F.R.S.—The Specific Heats of Metals, and the Relation of Specific Heat to Atomic Weight. Part III.: Prof. W. A. Tilden, F.R S.—On the Construction of some Mercury Standards of Resistance, with a determination of the Temperature Coefficient of Resistance of Mercury: F. E. Smith.—On the Effect of a Magnetic Field on the Rate of Subsidence of Torsional Oscillations in Wires of Nickel and Iron, and the Changes produced by Drawing and Annealing: Prof. A. Gray, F.R.S., and A. Wood.—On a Criterion which may serve to test various Theories of Inheritance: Prof. K. Pearson, F.R.S.

Linnean Society, at 8.—On the Bryozoa from Franz Josef Land: A. W. Waters.—Natural-Colour Photographs of Living Insects and Flowers: F. Enock.

Aëronautical Society, at 8.—Experiments with Aërial Screw Propellers: Major B. F. S. Baden-Powell.—The Beedle Airship: W. Beedle.—Mechanical Flight: Thomas Moy.

Institution of Mining and Metallurgy, at 8.—Annual General Meeting. Followed by Discussion on "The Equipment of Laboratories for Advanced Teaching and Research in the Mineral Industries."

FRIDAY, March 18.

Institution of Mechanical Engineers, at 8.—Compound Locomotives in France: M. Edouard Sauvage.

Epidemiological Society, at 8.30.—The Epidemiology of Enteric Fever and Cholera in Hamburg: Dr. Reincke.

SATURDAY, March 19.

Royal Institution, at 3.—The Life and Work of Stokes: Lord Rayleigh.

MONDAY, March 21.

Royal Geographical Society, at 8.30.—The Swedish Antarctic Expedition: Dr. Otto Nordenskjöld.

Faraday Society, at 8.—The Electrolytic Analysis of Gold: Dr. F. Mollwo Perkin and W. C. Prebble.—Thin Film Electrolysis with an Application to Printing: Chas. R. Darling. (With Experiments.)

Society of Arts, at 8.—Recent Advances in Electro-Chemistry: Bertram Blount. (Cantor Lecture, III.)

Society for Psychical Research, at 8.30.—A Case of Multiple Personality: Dr. A. Wilson.

TUESDAY, March 22.

Royal Institution, at 5.—The Doctrine of Heaven and Hell in Ancient Egypt and the Books of the Underworld: Dr. E. A. Wallis Budge.

Society of Arts, at 4.30.—Cotton Growing in the British Empire: Alfred Emmott, M.P.

Institution of Civil Engineers, at 8.—*Discussion*: The Barrage across the Nile at Asyut: G. H. Stephens, C.M.G.—The Use of Cement Grout at the Delta Barrage in Egypt: Sir R. H. Brown, K.C.M.G.—*Papers*: Lowering the Sill of the Ramsden Dock, Barrow-in-Furness: L. H. Savile.—Burntisland Harbour; Construction of the East Dock: R Henderson.

Mineralogical Society, at 8.—(1) Irregularly Developed Crystals of Zircon (Specific Gravity 4·0) from Ceylon: (2) Notes on "Feather-ore"; identity of "Domingite" ("Warrenite") with Jamesonite: L. J. Spencer.—The Connection between the Atom Arrangements of certain Allied Carbon Compounds: W. Barlow.—On the Construction and Use of the Moriometer: H. Smith.—(1) Note Relative to the History of the Caperr Meteorite; (2) On the Meteoric Irons of Bethany, Lion River, Springbok River and Great Fish River, South Africa: L. Fletcher, F.R.S.

WEDNESDAY, March 23.

Geological Society, at 8.—On the Discovery of Human Remains beneath the Stalagmite Floor of Gough's Cavern, near Cheddar: H. N. Davies.—On the Moine Gneisses of the East Central Highlands and their Position in the Highland Sequence: G. Barrow.

THURSDAY, March 24.

Royal Society, at 4.30.—Croonian Lecture, on the Chemical Regulation of the Secretory Process: Prof. E. H. Starling, F.R.S., and Dr. W. M. Bayliss, F.R.S.

Institution of Electrical Engineers, at 8.—Direct Reading Measuring Instruments for Switchboard Use: K. Edgcumbe and F. Punga.

FRIDAY, March 25.

Royal Institution, at 9.—Liquid Hydrogen Calorimetry: Prof. Dewar, F.R.S.

Physical Society, at 5.

Institution of Civil Engineers, at 8.—The Relative Advantages of Continuous and Alternating Current for Traction Purposes: J. M. Kennedy.

SATURDAY, March 26.

Royal Institution, at 3.—The Life and Work of Stokes: Lord Rayleigh.

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